Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
Modernizing the E-rate	)	WC Docket No. 13-184
Program for Schools and Libraries	)	

COMMENTS BY FRESNO UNIFIED SCHOOL DISTRICT
RELATED TO THE E-RATE 2.0 NOTICE OF PROPOSED RULEMAKING

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Introduction

Fresno Unified School District is a very large, urban district located in California's Central Valley, which serves more than 73,000 students, from preschool through grade 12. Demographically, more than 70 languages are spoken by the students and families that make up this diversely rich population.

Eighty percent of Fresno Unified students are eligible for free or reduced meals and nearly 10,000 participate in GATE, Honors, AP and IB programs. More than 7,000 students receive special education services and over 20,000 are English Learners.

There are currently 64 Elementary, 15 Middle and 8 High schools along with 4 Alternative and three Special Education sites. Additional campuses are expected in the Facilities Master Plan. Magnet Schools have provided innovative and exciting educational opportunities for students in the Fresno Unified School District for more than 25 years. With more than 20 magnet programs to choose from, families and students have many options for their children at schools where dedicated staff members are motivated to help enhance the educational experience of every student.

Fresno Unified School District has participated in the E-Rate Program since its inception and appreciates the opportunity to present the following comments in response to the Commission's NPRM proceeding "Modernizing the E-Rate Program for Schools and Libraries".

Connectivity Goals *(¶23-24)* *The State Education Technology Directors Association (SETDA) has set an Internet connectivity goal of 100 Mb per 1,000 users by 2014 (increasing to 1 Gbps per 1000 users by 2017) and WAN connectivity goal of 10 Gb per 1,000 users by 2017. Should the FCC adopt these goals?*

In the opinion of Fresno USD, **NO**; the FCC should **NOT** adopt these goals. First of all, there is an overly simplistic assumption of 'concurrency in use' in the way these figures are stated. For example: video bit rates for 720P/H.264 quality video, suitable for consumption on most PC screens, phones, and tablets is 2-3 Mbit/sec. Assuming worst-case numbers, if every one of a thousand students is watching a different video at this bit rate, and **at exactly the same time as every other student,** then one would need 3,000 Mbits/sec or about 3 Gbit/sec for 1000 students. Conversely, if the 'cap' is 1 Gbps per 1,000 students, then the assumed maximum concurrency is 33%. These concurrent user assumptions should be explicitly stated as part of the usage modeling, not implied; and they should be calibrated according to grade level. Kindergarten through 2nd graders probably don't need to be watching their own, different 1080P videos all at the same time *(we are not commenting in this context as to the educational value derived from each student in grades 3-12 watching their own individual 1080P videos at the same time).* This goal appears to be driven by a poorly conceived idea of achieving some level of technology saturation in the classroom, without sufficient clarity on whether the proposed goals are sensible, reasonable and just.

At 1080P resolution, video data rates double to about 6,000 Mbits/sec per 1000 students. For a District like FUSD, 100% concurrency for 75,000 students at just 3,000 Mbits/sec per thousand students leads to a *nonsensical* 225Gbit/sec aggregate rate for Internet connectivity. Even a 30% concurrency assumption is still a mind-blowing 70+ Gbps (i.e.: Our ISP just agreed to upgrade us to 10 Gbps this year. Imagine their shock if we were to ask for seven more of these? Put aside the limitations of our current Internet Provider; the Internet backbone **ITSELF** cannot handle all schools running **concurrently** at these rates, or even a fraction of them. We have some 'tragedy of the commons' thinking going on here.

Let's look now at WAN (not Internet) connectivity: for FUSD, we currently have 20 Gbps for 75,000 students, which we *just installed* in the summer of 2013. We offer high schools 1,000 Mbps, middle schools 500 Mbps, and elementary schools 100 Mbps in a slightly oversubscribed fashion (26 Gbps of total peak demand, implemented over a maximum 20 Gbps capable physical link.) 10 Gbps/1,000 users, by contrast, leads to a WAN connectivity need of 750 Gbps, or 37 times what we just installed. This, too, is inconceivable to introduce into a school district between now and 2017, with currently affordable technologies.

Second, the loose language in the "SETDA goals" makes the same mistake that telephone carriers make – but the carriers seemingly make it on purpose: conflating "100 Mb", which is a **quantity of bits**, with 100 Mb/sec, which is a rate. The first is analogous to a distance measure; the second is a velocity. This may seem like picking nits, but the language needs to be absolutely clear here. The phone carriers seemingly create this confusion on purpose, in order to avoid answering 'how fast exactly is my download speed on 4G' when it comes to Internet services, and instead change the subject to 'what is my total monthly data quantity capped at.' The answer is: a typical current family plan of 6 Gbits for $50 per month would be consumed by about 1,000 seconds of 6 Mbps 1080p HD video, which would take less than 20 minutes to watch. Imagine what it would cost if FUSD paid $50 every time a student watched a 20 minute 1080P HD video…which begs a question of why consumers currently face such pricing on "4G" plans.

The FCC should instead measure current real-world utilizations in a selection of "technology dense" schools **before** it tries to espouse any goals. For example, we have a middle school at FUSD named Computech. It has 700 students with nearly 1.5:1 density in computing devices (both school owned and BYOD), and it was operating fine at less than 100 Mbits of WAN connectivity last year, which leads to

an average per student data rate of about 140 Kbits/sec. We can't imagine how that school, which is as tech heavy as any school we know, will more than sextuple its needs by 2017 to reach 10 Gbps / 1000 students.

Currently we have a 2Gbps Internet connection that provides approximately 76.9Kbps per user (assuming 26,000 concurrent users, derived from our current counts of network attached devices, which is five or six times more concurrency than we actually observe in typical use). This bandwidth exceeds our peak usage by 80% and our average usage by much more. In the next 3 years we see this internet bandwidth usage tripling and the number of users doubling to 50,000, so our anticipated requirements are 8.25 Gbps in 2017. If we were to follow the SETDA recommendations of 1 Gbps per 1,000 users for connectivity to the Internet, we would need 75 Gbps or **more than 9 times** the bandwidth we anticipate. We think that 1Gbps per 1,000 internet users is excessive and that 165 Mbps is more realistic – or rounding up, we would recommend 200 Mbps per 1,000 users for a WAN connection to the Internet.

Broadband-Based Priorities (¶ 65-80)
The FCC proposes to update the E-rate priorities as they currently stand so that high-capacity broadband and the associated equipment needed to disseminate that broadband to and within those buildings becomes Priority 1. The other services would become Priority 2 or phased out altogether (see eligible services below). As part of this proposal, they ask many questions related to fiber deployment costs, barriers to fiber deployment, whether E-rate should support the purchase of WANs if it's more cost effective than leasing.

Every district's environment is different. Some are able to use dark fiber that the city is not utilizing, some need to refresh their equipment, others need it for bandwidth services, and still others would prefer to make a one-time investment in purchasing WAN. We also heard the idea of using some figure like $55/student per year as a 'target' or 'cap'. Over the last six years, our combined P1/P2 expenses led to about $80/student/per year of E-rate applicable expense (when spread across the 90% who were eligible, that is.) And that was without "maintenance" costs, which we have had to forgo because of its expense and current "unbundled warranty ineligibility". The piper will be paid on not having this maintenance someday; we are only able to survive it because of our size and the skill of our staff. Most districts do not have this luxury. If we add back in the maintenance (say, at 5%) that brings our rates up to about $84/student/per year, and we consider ourselves to be pretty cost effective compared to our peers. To designate one approach to providing broadband capacity will not work because no single approach will solve the myriad of network configurations currently in use by our schools.

Equitable Access to P2 Funding (¶ 133 and 146) *How can the FCC ensure more applicants have access to P2 funding? Should the 2/5 rule be replaced with another rule, such as a 1/5 rule? Should P2 be funded on a rolling-funding cycle? Should there be different priorities established, such as a broadband/Internet P1 category and other service (such as voice) become Priority 2 (or some other priority)?*

The ability to deliver Internet bandwidth to our students is ultimately a combination of both Priority 1 and Priority 2 funding. The 2/5 rule was developed on expenses for broadband a decade ago and purchases by school districts that did not have the level of sophistication to build networks. The funding for both Priority 1 and 2 should be increased and districts given more flexibility to spend those funds. Collapsing the priorities into just one 'bucket' makes more sense. A district cannot use the "internet" or "voice" services if it does not have functional equipment. A 2-in-5 or 1-in-5 rule is too simplistic. Better to estimate reasonable equipment lifetimes for Wifi access points, switches, and routers (5-7 years) and allow 1/5th or 1/7th of the equipment to be fully replaced every year or 2/5th or 2/7ths every other year, for example. In our physical environments, 7 years seems to be the outer edge of lifetime due to temperature, dust and other environmental concerns.

Fixed Budget Model (¶ 149) *Allocating funds to all eligible schools and libraries through a fixed dollar amount before the funding year begins.*

Block grant funding can be misused, which would ultimately lead to elimination of the program. The early E-rate program had little oversight and abuse was rampant. Although the current program design requires more oversight, it has outlasted many block grant funds and has eliminated much of the abuse that was in the headlines in the past. USAC has made it clear that accountability is critical within all aspects of the program and they do a great job in enforcing it.

Need for More Funding (¶ 174) **…***Should we instead consider a more permanent change to the cap to achieve the goals of a modern E-rate program? When the Commission adopted the $2.25 billion cap 16 years ago, it recognized that it was a best efforts attempt to estimate what the demand would be for telecommunications and Internet access services by schools and libraries. Commenters advocating an increase in the cap emphasize that every funding year applicants have requested more than is available in E-rate support. They further argue that because of the effects of inflation and the growth in the number of students in our nation's schools, the actual purchasing power of the E-rate program declined by nearly one third from the start of the program in 1998 to today. We seek comment on these arguments.*

To maintain what we have (which isn't quite enough to do much better than perhaps 3:1 students/device) Fresno Unified School District has spent about $30M over 5 years, or $6M a year on average. If you added in the rather lofty SEDTA goals, this total would balloon exponentially. Our current E-Rate funds are $3.5 million to $5 million based on whether we apply for Priority 2 funding. We believe funding a district of our size with our demographics at $5-6 million over the next 5 years would allow us to continue moving forward at a pace that will match our student need.

Program Simplification (¶ 224) *…Applicants for E-rate funds are required to complete approximately six FCC forms over the course of a funding year. Some applicants spend many hours not only filling out FCC forms and gathering required data, but also responding to questions from USAC and requests for additional information, including documentation. As a result, many applicants feel the need to hire consultants to handle these tasks. While consultant fees cannot be paid using E-rate funds, they are a cost to program participants, and therefore may reduce the net benefits that schools and libraries realize from participation in the E-rate program.*

We believe that E-rate consultants ultimately account for such a small percentage of the funding received, that districts who desire to do so, should continue to utilize them to ensure accuracy, program compliance, and proper use of funds. With the current E-rate regulations, consultants are the logical equivalent of tax attorneys and tax preparation experts. Woe unto him who tries to swim these waters alone and suffers an E-rate audit, which is a fate worse-than-IRS audit.

Given the size and complexity of FUSD's funding requests, there is a huge comfort level provided by the E-rate consultants we use. The true value is not simply in the filling out of forms, but in the subsequent information gathering and response, reconciliation, and record-keeping requirements mandated by the program. Retaining an outstanding consultant allows district personnel to continue to focus the technology and its delivery to the classroom. This would otherwise be a full time job for a district employee, just understanding the rules, interpretation and changes in with the rules and policies of USAC, SLD and FCC.

Our E-rate consultants allow us to outsource a critical oversight and review function to very capable group of people who are much more knowledgeable than we are of all of the myriad intricacies. They are to FUSD, invaluable.

CIPA (¶ 271) *Stakeholders have sought clarification on the applicability of CIPA to devices not owned by E-rate recipients but using E-rate supported networks and to off-premises use of devices owned by schools and libraries. We seek input from interested parties about the measures schools and libraries are taking and need to take to comply with CIPA when they allow third-party devices to connect to their E-rate supported networks. Also in response to stakeholder concerns, we seek comment on what steps schools and libraries are taking and must take to ensure that they are not violating CIPA when they provide employees, students and library patrons with portable, Internet-enabled devices that can be used off-premises.*

In our humble opinion, we feel there is a very simple solution to the myriad of questions presented by the Commission regarding updating the outdated CIPA language: CIPA should not be a requirement for E-Rate. If there have to be liability laws related to what students are intentionally or accidentally exposed to on the "Internet" *(never mind the magazine in some other child's backpack or the images on his/her phone)*, these should be decoupled from E-Rate funding and handled some other way, as these other issues are. The simple reality for FUSD is reflected in this analogy: we have one "door", the FUSD-provided network, with a platinum vault door with a big spinning gold safe wheel locking it down (CIPA-mandated content filtering). Right next to it is a wide open door: the Wi-Fi-Tethered 4G phone that students carry in their pockets, which is unfiltered. Which do you suppose students will head for if one frustrates them by blocking Facebook and YouTube, and the other does not? Unless we turn ourselves into a police state and confiscate the very BYOD we are trying to encourage students to bring, or develop some secret 4G disrupter rays that we can spend even more E-Rate money on, we simply have to acknowledge that the world has changed; rigid content filtering doesn't make much sense anymore. Ask China and Australia how successful they've been with it. Drop the need for CIPA filtering to qualify for E-rate, and encourage schools to adopt liability policies for which other laws already provide sufficient penalties.

We are happy to discuss any aspect of our comments with the Commission or appropriate staff and will make ourselves available should it be requested.

Regards,

/s/

Eric Tilton
Executive Director
Information Technology
Fresno Unified School District
eric.tilton@fresnounified.org
559.457.6180 x50013